impressions, but presumably contains also centrifugal pathways, securing to the visual area an influence upon muscular motions, etc.

(2) The projection system of the body—sensational area ("tactile-area" of Flechsig, motor area of the other authors): The pathways for the foot of the first frontal convolution and for the middle third of the fornicate gyrus describe a forward curve reaching as far forward as two or three cm. from the "pole" of the frontal lobe. Lesions (softening foci) involving the anterior end of the frontal lobe may consequently interrupt projection fibres for the trunk and neck muscles represented in the said cortical areas (foot of third frontal convolution and middle third of the fornicate gyrus).

(3) The fasciculus subcallosus also contains projection fibres which, leaving the internal capsule at the level of the middle thalamus, pass along the caudate nucleus partly as far forward as the knee of the corpus collosum and join the projection system of the fornicate gyrus, and of the most anterior divisions of Flechsig's "tactile-area."

The examination of the infantile brain shows that long association fibres connecting the occipito-temporal lobe with the frontal lobe are very scarce. ONUF.

On hemisection of the spinal cord. By Dr. F. Botazzi (Rivista sperimentale di freniatria. Vol. 21, Fasc. 4). In this article the author describes the clinical condition and the degenerative changes observed in four dogs on which he had performed hemisection of the cord in the dorso-lumbar region and which were allowed to live for 16, 127, 132 and 207 days after the operation respectively. In giving a general critical review of the literature on hemisection of the cord and comparing his results with those of other investigators the author reaches the following conclusions:

1. The motor pathways for the inferior (posterior) extremities are contained chiefly in the lateral column of the same side.

2. The fibres for the tactile sense are contained exclusively in the uncrossed half of the cord, probably in Goll's columns.

3. The pain sense and the electric sense are conducted in both sides of the cord, but predominantly in the homonymous half.

4. [The temperature sense is conducted in the uncrossed half of the cord (?); the muscular sense does not seem altered after hemisection (only one observation)].

5. Hemianæsthesia exclusively of the side opposite to the hemisection would result only, if the section was made above the level at which the last sensory fibres have undergone decussation, namely, above the spinal cord.

6. At the level of the dorsal portion of the cord decussated sensory fibres are much more scarce than the uncrossed ones.

7. It is very probable that for one form of sensation (tactile) at least, no decussation takes place in the spinal cord.

ONUF.

PATHOLOGICAL.

Contribution to the Knowledge of the Secondary Changes in the White Substance of the Cord due to Disease of the Cauda Equina. By Prof. L. O. Darkschewitsch (*Neurolog. Centralblatt*, 1896. No. 1) The report concerns a case of carcinoma which had involved the abdominal surface of the second, third and fourth lumbar vertebræ. The neoplasm had not entered into the vertebral canal, but corresponding to the lower fourth of the cauda equina the dura presented the condition of a pachymeningitis externa hypertrophica which had led to degeneration of the roots within said area.

Examination of the cord showed the absolute absence of any other changes but those due to the degeneration of root fibres.

All posterior root bundles up to the level of the first lumbar segment were degenerated; from the twelfth dorsal segment upwards they were all normal. Accordingly the transverse sections showed degeneration of both posterior columns in their whole extent from below up to the first lumbar segment. Further upwards normal fibres began to appear at the medial border of the posterior horn, that is, in the region corresponding to the zone radiculaire. This zone of normal fibres become larger, extending more and more mesial, the higher one came upwards in the cord, so that at the level of the third cervical segment the area of degeneration was reduced to a wedge, the base of which corresponded to the dorsal border of Goll's column, while its point was at about one-quarter of the depth of the posterior longitudinal septum behind (dorsad of) the posterior commissure. In other words, the degenerated area which represent directs fibres of the posterior root bundles of the cauda equina, corresponded in this region exactly to that part which on specimens of embryons is described as Goll's column.

At the height of the nuclei of the posterior columns, the degeneration in the white substance extended also over the whole column of Goll and reached also within the nucleus of Goll's column of each side. Burdach's columns and the nuclei of Burdach's columns were normal.

In the upper region of the lumbar and the lower regions of the dorsal portion of the cord, degenerating root bundles could be followed to the lateral periphery of Clarke's columns and partly within these formations.

The posterior commissure showed nowhere any degenerating fibres, which, D. concludes speaks against the statement,